SPACE SCIENCE ADVISORY COMMITTEE (SScAC) MEETING

Jet Propulsion Laboratory
March 3-5, 2003

Letter to Associate Administrator Dr. Edward Weiler from Dr. Andrew Christensen, Chair of SScAC

Dear Dr. Weiler,

I am pleased to provide you a summary of the Space Science Advisory Committee (SScAC) meeting held in public session March 3-5, 2003 at NASA/JPL. In addition, I am including the final report of the E/PO Task Force as well as the subcommittee reports from SEUS, SECAS, OS, and SSES.

Our meeting began with a warm welcome to the facility by Dr. Charles Elachi. We enjoyed the wonderful facilities and the excellent technical support provided by the JPL personnel during our visit.

During your briefing on the budget, we were pleased to learn about new content in the FY 04 budget: Project Prometheus, Optical Communications, and elements of the Beyond Einstein program. This is a clear indication of the outstanding leadership and effectiveness of you and your staff for fostering a healthy and exciting domestic and international space science endeavor.

We heard from members of your staff and we were impressed with the degree of scientific progress across the disciplines. It is interesting to note that the management issues brought before us were based primarily on the growing number and complexity of the programs, indicative of the vibrant and growing science activities in OSS. The presentations by Anne Kinney, Colleen Hartman, Orlando Figueroa and Richard Fisher were interesting, informative and sometimes entertaining. We appreciate their candor and willingness to share their concerns with us.

The meeting was organized around presentations by the Division Directors followed by briefings by the Subcommittee chairs. This structure allowed SScAC to review the subcommittee recommendations in accordance with FACA regulations. We also greatly appreciated the excellent presentation by Karen Poniatowski in response to our request for an update on the launch availability issue. The committee is eager to help insure continued access to space for our small and mid-class payloads and welcome Karen's invitation for continued dialog.

Al Newhouse's energetic presentation regarding the new Prometheus project was very well received. Specific issues related to his presentation are included in the comments and recommendations summarized below.

And finally, the SScAC wishes to express appreciation to Paul Knappenberger and his E/PO task force for their outstanding report on the status of the OSS E/PO activities.

Specific comments and recommendations follow.

FACA Charter

The SScAC discussed the pros and cons of FACA status for its four subcommittees. Non-FACA status would reduce the paperwork burden on NASA and the committee members and eliminate the need for open meetings and public notification of meetings. Recommendations however would need to be passed to the SScAC for approval and forwarded to the Division Directors. Responding effectively to the level of detail involved in the very different programs and constituencies in each of the themes then becomes a challenge for a single committee such as SScAC. FACA status would allow recommendations to flow directly, as in the past, from the subcommittees to the Directors. **The SScAC believes that FACA status is a valuable and important aspect of the advisory process and recommends that OSS charter the SScAC subcommittees as FACA committees.**

Gravity Probe B (GP-B)

The SScAC heard from A&P Director Anne Kinney and from SEUS Chair Rocky Kolb about the most recent problems with the Gravity Probe B (GP-B) mission. We endorse the A&P plans to scrutinize closely the status and prospects of GP-B prior to making any additional commitments. It makes good sense to appoint separate technology and science review panels, and to ask them to provide a rapid and unambiguous assessment of GP-B. We recognize that additional cost growth in the program could be large enough to have an impact on the entire Astronomy and Physics program; consequently, it is important that the science panel be broadly representative of the whole space astrophysics community. It should assess the overall science value from a broad perspective keeping in mind the science potential of Beyond Einstein programs such as LISA**. We would like to hear, at our next meeting, a report on the outcome of the panel recommendations regarding GP-B.**

Radioastron

The SEUS brought the issue of the Radioastron mission to the attention of SScAC. During its recent subcommittee meeting, the SEUS heard candid and comprehensive presentations from Ed Fomalont and Jeff Hayes regarding the Radioastron scientific goals and mission development. The SEUS was tasked to consider the potential scientific payoff of Radioastron in light of the anticipated cost. **SScAC and the SEUS are hopeful that the Russian space program will thrive as a partner in future international space astrophysics programs, but for the Radioastron mission we believe that the science payoff does not warrant the cost.**

Project Prometheus

This program combines several on-going technology development initiatives under one umbrella within the SSE theme: radioisotope power system, nuclear electric power, and nuclear propulsion system. SScAC remains strongly committed to the development of nuclear space power and propulsion systems that greatly expand the reach and capabilities of future space science missions. The committee, therefore, welcomes the Congressional support in the FY03 budget.

We recommend that Code S aggressively engage the *broad* space science community in exploring the opportunities provided by this new program. Some mechanisms may include more information dissemination, workshops, NRA concept studies, etc. This should result in the identification of missions in ***all thematic areas*** that would benefit from these developing technologies (indeed such technologies may enable missions previously thought to be in the realm of science fiction, or at least in the realm of unrealistically large budgets).

To succeed, Project Prometheus will draw upon a highly distributed set of assets and capabilities at DOE and NASA's national labs, universities, and industry sites. Compared to traditional space science projects, Project Prometheus is more complex. "Getting it right" at the front end of this project is critical to the long-term viability of the advanced technology initiative and the subsequent success of the space missions. **Thus, SScAC recommends that as much attention should be given to the management plan as is given to the technology plan. Furthermore, the SScAC is willing to assist in an advisory role and would be pleased to appoint a task force staffed with individuals qualified to oversee the early stages of Project Prometheus.**

JIMO

The Jupiter Icy Moons Orbiter (JIMO) has been identified as the inaugural mission in the Prometheus Project. The committee applauds the Congressional support in the FY03 budget for the first increment of funding for the JIMO mission. SScAC is pleased at this explicit linkage of technology development with an identified science mission. This will focus the early stages of the advanced technology plan and spur the timely development of mission-critical flight hardware. The JIMO mission is fully aligned with the recommendations of the Decadal Survey for Solar System Exploration, which listed a mission to Europa as the top "flagship" mission. JIMO should reflect the Decadal Survey's recommendation for the necessary investment in capabilities, tools, techniques, personnel, and supporting research to ensure maximum scientific return from the mission. **At a future meeting, SScAC would like to hear how the implementation plan responds to the Decadal Survey investment recommendation.**

James Webb Space Telescope (JWST)

The SScAC acknowledges the highest priority given to JWST by the 2000 Astronomy and Astrophysics Survey – JWST is the Hubble Space Telescope of the next decade. The SScAC

believes that the scope of the JWST mission is commensurate with its central role in the Origins theme and notes that JWST will make important contributions to the SEU and SSE themes as well.

Alan Dressler reported concerns raised by the Origins Subcommittee regarding the JWST replanning effort, which was described to SScAC by Anne Kinney. The OS has reaffirmed its unanimous opinion that inclusion of the MIRI instrument, which gives a broad infrared wavelength capability to JWST and enables both important science and an unparalleled sensitivity compared to current and anticipated space- and ground-based telescopes, is essential for a successful mission. Since no solution that maintains this science scope for JWST has been found within the desired budget and funding profile, the OS agrees with Anne Kinney that the replan process has not yet succeeded. SScAC supports a solution that prevents a major loss of science capability from the JWST. **The SScAC joins the OS in supporting its recommendation that the process be continued to find a successful outcome.**

Small Paylad Launch Capability

Several recent reports and plans stress the fact that "access to space at a reasonable cost" for space science payloads is a fundamental issue. The SScAC appreciates the review of launch assets that has been conducted by Karen Poniatowski (Code M) on behalf of the space science community and the initial steps taken to proactively deal with this issue. The extended buy of Delta IIs, assessment of DoD assets, and the request for a waiver to fly on a foreign vehicle are positive steps. However, there is a great deal of uncertainty as to the future availability of small and medium sized launchers for space science payloads due to the lack of demand by DoD and commercial firms for these vehicles. The availability of small launch vehicles and the launch rate required to maintain a healthy manufacturing capability remains a concern that extends beyond the five-year time span for which reasonable predictions can be made.

As NASA further assesses its options and makes inputs to the Administration's revised National Space Transportation Policy, **the SScAC recommends the Agency maintain its commitment to assured access to space for all classes of space science missions and be open to innovative policy and procurement options in support of this goal.**

This issue was brought before the NASA Advisory Council at the March 03 meeting. It was deemed an important issue for their consideration. The NAC plans to obtain additional presentations and information before making a formal recommendation to NASA management.

Education and Public Outreach

At this meeting the SScAC reviewed and discussed the Report of the EPO Task Force. The Committee endorses the Report, thanks the Task Force for its work, and is pleased to transmit the findings and recommendations to the Office of Space Science for its consideration (see attached Report). SScAC was pleased to learn about the substantial progress the EPO program

has made over the past six years. It is clear that the EPO Program has taken an innovative, process-oriented approach that has achieved many successes.

At this time, the SScAC finds that the start-up phase of the EPO Program is complete and it is ready to move to the next level of maturity. **SScAC endorses the specific recommendations presented in the Task Force Report to improve the effectiveness of an already successful program.** We want to call special attention to the need to provide greater coherence and accessibility for its educational products; to reach out more aggressively to serve other audiences like community colleges, undergraduates, and pre-service teachers; and to strengthen and expand professional development efforts for EPO professionals, educators and scientists.

SScAC hopes that the OSS E/PO program could serve as a model for future NASA educational efforts. This Committee has previously expressed its concerns about the potential impact of the new Office of Education on the OSS EPO Program (see previous letter from SScAC Chair). We urge the OSS management to be proactive in this regard and help the Office of Education in establishing programs.

The SScAC shares the concern expressed in the Task Force Report regarding the role of Code N in the OSS E/PO activities and noted by the NASA Advisory Council at its March 03 meeting.

Research and Analysis

A number of SScAC members asked questions about the R&A program at different points during the meeting. R&A remains a particularly important element of the OSS budget for the scientific utilization of its diverse mission by the science community. As the meeting developed the SScAC came to realize that we did not have a broad understanding of the extent of the R&A program in each of the Divisions.

SScAC requests a detailed briefing on the R and A budget to better understand the breath of R and A activities and budgets within OSS.

Sincerely,

Andrew B. Christensen
SScAC Chair

c. Dr. Mark Allen, Director for Strategic and International Planning
Space Sciences Advisory Committee
Dr. Anne Kinney, Director, Astronomy and Physics Division
Dr. Charles Kennel, Chair, NASA Advisory Council
Dr. Richard Fisher, Director, Sun Earth Connection Division
Dr. Colleen Hartman, Director, Solar System Exploration Division
Dr. Orlando Figueroa, Director, Mars Exploration Program

Dr. Jeff Rosendahl, Director for Education and Public Outreach
Ms. Marian Norris, Management Support Specialist

Attachments:

SESS meeting report
OS meeting report
SECAS meeting report
SEUS meeting report
E/PO Final Report